

REMARKS

Initially, Applicant would like to thank the Examiner for his careful consideration of the subject application.

Prior to this Amendment "A", claims 1-13 were pending in the present application. In this Amendment "A", Applicant has amended claims 1, 3, 5, 6 and 9-11, has canceled claims 4, 7 and 12-13 and has added new claims 14-22. Reconsideration of the application in its current format is hereby requested.

In the Office action, the Examiner noted that the references cited in the "Description of the Prior Art" section of the specification were not considered by the Examiner because the references were not submitted in a separate paper. In response, Applicant has enclosed herewith an Information Disclosure Statement in accordance with 37 CFR § 1.98, along with copies of the listed references.

The Examiner has also found the submitted declaration to be invalid because it does not comply with the requirements of 37 CFR § 1.67. Applicant notes that the submitted declaration contained the wrong second page. Another copy of the declaration with the correct second page is enclosed herewith.

The Examiner has also objected to the drawings because Fig. 2 has the item designated by reference number 32 labeled as "decisioa logic", whereas the specification refers to item as being "decision logic". In response, Applicant has enclosed herewith a Replacement Sheet for Fig. 2 containing the correct label for reference number 32, namely "Decision Logic". The Examiner has also objected to the drawings because the reference number 32 is also used in Fig. 2a to designate "memory". In response, Applicant has enclosed herewith a Replacement Sheet for Fig. 2a containing a new reference number for "memory", namely reference number 33. Applicant has also amended the specification to change the reference number

for the memory from 32 to 33.

The Examiner has objected to the specification for: not properly defining the acronym "HIF", incorrectly using the reference number 30 and not showing reference number 28. In response, Applicant has amended the specification to include a definition of "HIF" and to correct the use of the reference number 30, and has included the reference number 28 in the Replacement Sheet for Fig. 2a.

The Examiner has objected to the claims for various informalities and has rejected claims 3, 4 and 6-9 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant submits that the amended claims address the foregoing and meet the requirements of 35 U.S.C. §112, second paragraph.

The Examiner has rejected claims 1-5, 8, 9 and 11-13 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,550,751 to Russell et al. Since claims 12 and 13 have been canceled, this rejection is moot for claims 12 and 13. Applicant traverses this rejection for the remaining claims for at least the reasons set forth below.

The Russell et al. patent discloses an expert detector 10 for detecting and distinguishing a high impedance fault from other normal occurrences on a distribution system conductor, power line or feeder. The expert detector 10 includes a detection technique library 102 of multiple high impedance fault detection techniques, such as first, second and third techniques 102, 104, 106. Each of the techniques 102, 104, 106 produce a single fault indication status output that is either "fault" or "no fault". The expert detector 10 has an expert's belief portion 120, which generates B_1 through B_N belief weighting signals 122-128, each corresponding to an

expert's belief as to the accuracy of each of the techniques 104-110. The expert's belief in each technique has a degree of uncertainty, which may be expressed as a percentage of certainty or a belief value, between 0 and 100% certainty (column 8, lines 25-28). A belief adjustment or weighing portion 130 adjusts each of the status signals 122-118 by weighting each of the signals 112-118 with the respective expert's belief weighting signals 122-128 to provide adjusted belief signals 132-138, respectively. A belief combination portion 140 combines each of the adjusted belief signals 132-138 with an uncertainty reasoning method to calculate C_F which is supplied to the decision portion 144 as a final combined evidence signal 142. The combined evidence signal 142 (C_F) does not have one of two logic states. Instead, the combined evidence signal 142 (C_F) is a variable signal that can have any of a large number of values. Therefore, a set of threshold values ($THRESHOLD_F$, $THRESHOLD_{AL}$, $THRESHOLD_N$) are provided to decide the limits of the combined evidence signal 142. Based upon the combined evidence signal 142 and the threshold values, the decision portion 144 determines whether a fault has occurred according to the following considerations:

For $C_F > THRESHOLD_F$, then a fault has occurred;

For $C_F < THRESHOLD_N$, then conditions are normal;

For $THRESHOLD_{AL} < C_F < THRESHOLD_F$, then it is an indeterminate or alarm condition.

Thus, in summary, the Russell et al. patent uses a plurality of techniques 102-106, each of which produce a true or false status indication status (T or F). These statuses, however, are then weighted, combined and processed to produce the variable combined evidence signal 142 (C_F), which is then analyzed by the decision portion 144 using thresholds to determine a normal condition, a fault condition, or an

intermediate condition. In contrast to the complicated system of the Russell et al. patent, the claimed invention simply looks at the outputs of a plurality of techniques and if two or more indicate a high impedance fault, a determination is made that a high impedance fault has occurred. This is not shown, or in any way suggested, by the Russell et al. patent. Thus, Applicant submits that the Russell et al. patent fails to show or suggest independent claims 1, 5, 10 and 11 and, thus, dependent claims 2, 3, 6, 8, 9 and 14-22.

The Examiner has rejected claim 12 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Publication No. 2001/0036047 to Macbeth et al. The Examiner has also rejected claim 12 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,718,271 to Tobin. Since claim 12 has been canceled, Applicant submits that these rejections are moot.

The Examiner has rejected claims 6, 7 and 10 under 35 U.S.C. §103(a) as being unpatentable over the Russell et al. patent in view of admitted prior art. The Examiner acknowledges that the Russell et al. patent does not teach a wavelet based system, a higher order statistics based system, or a neural network based system. The Examiner, however, cites Applicant's Description of the Prior Art as showing that it is well known in the art to use such systems to detect high impedance faults. The Examiner then finds that it would be obvious to one having ordinary skill in the art to utilize these systems in the expert system of the Russell et al. patent.

As set forth above, the Russell et al. patent fails to show or suggest independent claim 10. More specifically, the Russell et al. patent fails to show or suggest *"a decision logic for determining whether said high impedance fault has occurred, wherein said decision logic determines that said high impedance fault has occurred if any two of said*

first logical output, said second logical output, and said third logical output indicate that said high impedance fault has occurred", as is presently recited in amended independent claim 10. Neither Applicant's Description of the Prior Art, nor the other cited references cures this deficiency of the Russell et al. patent. For at least this reason, Applicant submits that the Russell et al. patent and Applicant's Description of the Prior Art fail to show or suggest independent claim 10 and, thus, dependent claims 18-21.

Based on the foregoing, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 050877.

Respectfully submitted,

ABB Inc.

By: 
Paul R. Katterle, Reg. No. 36563

November 18, 2005
ABB Inc.
29801 Euclid Avenue-4U6
Wickliffe, Ohio 44092-2530
(440) 585-7968